

Ames Laboratory Waste Generator Annual Refresher

What is waste? Waste is anything that you no longer want or need. The four types of waste generated at Ames Laboratory are sanitary, radioactive, mixed and hazardous. Everyone who generates waste is responsible for knowing how to handle the waste that they produce.

Sanitary Waste is normal waste that can legally be placed in a dumpster or in a sanitary drain. The City of Ames regulates sanitary waste. Ames uses Refuse Derived Fuel (sanitary waste mixed with coal) to generate electricity for the city. Any waste placed in a dumpster will likely be burned for energy. It is important that no hazardous materials are put in a dumpster. The City of Ames has established a stringent limit of 0.06 parts per million arsenic at the University monitoring point for sanitary wastes sent to the Sewage Treatment Plant. While other limits are not as stringent, please consider the impact of your waste when it is disposed. Call ESH&A at 4-2153 for guidance.

Radioactive Waste is a waste, which contains one or more radioactive isotopes. Examples of radioactive waste include contaminated equipment, metals and metal ores that contain a radioactive isotope, or absorbent material that has been used in a process involving radioactive material. If you are planning to use radioactive materials, you must have Radiological Worker II Training. Contact Mike McGuigan for more information, 4-7922.

Mixed Waste is any waste stream, which contains a radioactive component as described in the previous section and a hazardous component as described in the next section. Since the waste contains materials regulated by different sets of rules, it is difficult to manage. Contact ESH&A at 4-2153 for detailed management strategies for mixed waste.

Hazardous Waste The Environmental Protection Agency (EPA) has defined hazardous waste in two different ways. First, a waste stream can be hazardous by *characteristic*. These characteristics are:

Ignitable	flash point < 60 C (140 F)
Corrosive	pH < 2 or pH ≥ 12.5
Reactive	ability to explode or undergo rapid or violent reactions
Toxic	harmful or deadly at low concentrations

Second, a waste stream can be hazardous by being [specifically listed](#). These lists are:

- D-list Toxic as determined by the Toxicity Characteristic Leaching Procedure (TCLP). TCLP tests for 8 metals and 32 organic compounds.
- F-list Predefined mixtures of spent solvents.
- U-list **Toxic**. Discarded commercial chemical products listed in 40 CFR 261.33(f). (e.g. acetone, toluene, formaldehyde, DDT).
- P-list **Acutely toxic**. Discarded commercial products, off-specification species, container residues, and spill residues thereof listed in 40 CFR 261.33(e). (e.g. cyanide salts, nickel carbonyl, heptachlor, beryllium).

Containers must be compatible with the contents. Specific cases of incompatibility include hydrofluoric acid and oxidizing acids.

Hydrofluoric acid should always be stored in a Nalgene or plastic container since this acid will etch glass. Oxidizing acids (nitric acid, sulfuric acid, perchloric acid) should always be placed in glass since over time the acids will cause Nalgene or plastic to become brittle.

Labels on waste containers require a minimum of three pieces of information for EPA.

- The date when the container is full (end date)
- A complete description of the contents (no formulas)
- The words "Hazardous Waste"

Additional information required by Ames Laboratory are:

- Group name or Group Leader name
- Location where waste was generated (building and room)
- Container specific identification number (not to be reused)
- Date when waste was first added to the container (start date)
- Hazardous properties of the waste (check appropriate box)

Satellite Accumulation Areas (SAA). EPA considers any location at or near the point of generation that is used to accumulate hazardous waste a satellite accumulation area. Waste containers in a SAA must be closed at all times, properly labeled. Liquid waste must be in secondary containment. Waste containers must be under the control of the generator who placed the waste in the container. Hazardous waste may be accumulated for a period of **90 days**, starting with the first addition to the container. After 90 days or when the container is full, the generator shall enter containers into the Laboratory's hazardous waste web application to request a waste pick-up. Waste will be picked-up within 3 days.

Hazardous Waste Web Application. This web based form must be completed and submitted prior to waste being collected from a SAA. All of the information that has been recorded on the waste container label must be transferred to the web application. See [Web Application Guidance](#) for instructions.

Nanomaterial Waste. Contains engineered unbound nanoparticles (1-100 nanometers). Use the same protocols for hazardous waste when storing and labeling nanomaterial waste. Also, add "contains nanoparticles" to the label.

Pollution Prevention. The Laboratory follows the EPA hierarchy of pollution prevention (waste minimization and affirmative procurement). First, **reduce** the volume of waste that is generated by a process. This can be accomplished by reducing inputs and/or the toxicity of inputs. Second, **reuse** any outputs as source material for the process. Can you reuse solvents or reuse wipes and towels? Third, **recycle** those materials, which you are unable to reuse. Recycling involves using by-products of a process to create a new usable product. DOE funded facilities are required to buy products made of recycled materials unless the products cannot meet required specifications or the cost of the products is prohibitive.

You can also utilize the Lab's [chemical inventory database](#) to search for chemicals to possibly use instead of purchasing large quantities when only a small amount is needed. You will need to use your Ames Laboratory credentials to log into the Web Application. If you have any questions please contact the ESH&A Office at 294-7923.